Trend Study 17-50-00

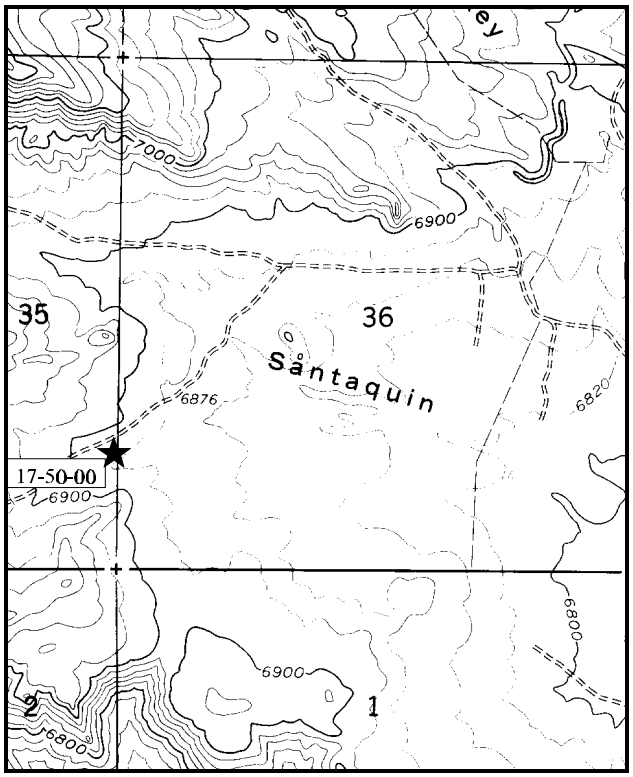
Study site name: Lower Santaquin Draw . Range type: Big Sagebrush-Grass .

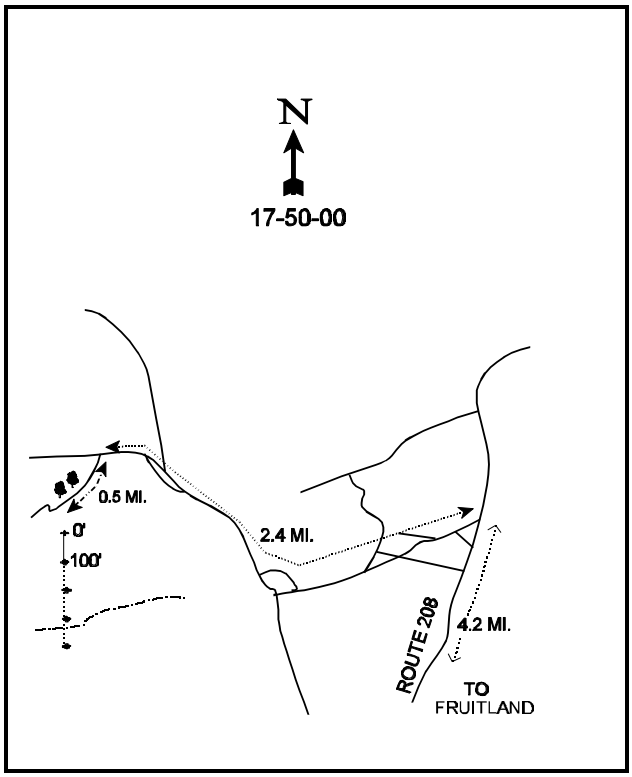
Compass bearing: frequency baseline 180°M .

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 83ft), line 2 (38ft), line 3 (54ft), line 4 (79ft).

LOCATION DESCRIPTION

From Highway U.S. 40, take Route 208 towards Tabiona for 4.2 miles and turn west onto a dirt road. Go 2.4 miles on the main road towards Santaquin Draw. Take the road to the left for 0.5 miles to the next intersection to a group of junipers and a witness post. From the witness post the 0-foot stake is 30 feet to the south. The 0-foot stake is marked with browse tag number 7021.





Map Name: Tabiona Diagrammatic Sketch

Township 2S , Range 8W , Section 35 UTM 4456389.022 N, 521682.562 E

DISCUSSION

Trend Study No. 17-50 (13-5)

The Lower Santaquin Draw trend study monitors a sagebrush-grass site on deer and elk winter range in Lower Santaquin Draw. Terrain is nearly level and elevation is approximately 6,880 feet. Low ridges covered with pinyon-juniper are within the immediate proximity of the study site. The surrounding woodland provides important escape and thermal cover. The area is obviously critical winter range as many antler sheds, winter-killed deer and pellet groups were observed during past readings. Numerous jackrabbit pellets and cattle pats were also observed during study establishment in 1982. Pellet group data taken along the study baseline in 2000 estimated 15 deer, 31 elk and 8 cow days use/acre (37 ddu/ha, 77 edu/ha and 20 cdu/ha). About half of the deer pellet groups appear to be from spring use with the other half from winter. About 75% of the elk pellet groups appear to be from fall/winter use with the rest from spring use.

Soils are alluvially deposited and deep but generally undifferentiated. Soil texture is a loam with few rocks on the surface or within the profile. Effective rooting depth is estimated at just over 10 inches. The soil would be expected to be much deeper however and penetrometer readings were limited by soil compaction and a hardpan. Ground cover is fair for this type with percent bare ground ranging from 33% to 45% since 1982. Soil on the site is very light textured and easily erodible. Sheet erosion is a factor, but it is greatly reduced by the levelness of the terrain and an adequate amount of vegetation and litter cover. However, stream courses in the area tend to be rather deep, steep-sided gullies, effectively lowering the immediate areas water table. There are active gullies around the site and a single 4-foot gully near the end of the basline.

The key browse species consists of a moderately dense stand of Wyoming big sagebrush. This site, like the previous one, contain sagebrush with characteristics of both mountain and Wyoming big sagebrush. All sagebrush in this report are considered Wyoming big sagebrush. Total density has remained similar since 1982 at around 5,000 plants/acre. During the 1982 reading, 28% of the sagebrush was heavily hedged and 34% of the population displayed poor vigor. Percent decadence was reported at 25%. By 1988, percent decadence increased to 44% with more moderate use, yet improved vigor. Percent decadence declined to 8% in 1995 with heavy use reported on only 17% of the population. Use is similar in 2000, but due to the dry conditions, more sagebrush show poor vigor and percent decadence again increased to 22%. Decadent sagebrush classified as dying is currently (‘00) 46% or approximately 500 plants/acre. The number of seedlings and young plants have declined since 1988, but numbers are adequate to maintain the population.

The only other palatable browse species includes a small but stable population of winterfat. Density has ranged from 866 plants/acre in 1982 to 1,100 in 2000. Use was moderate to heavy in 1982 and 1988, but mostly light in 1995. Use was moderate to heavy in 2000. Other less desirable browse occur in low numbers and consists of narrowleaf low rabbitbrush, broom snakeweed and pricklypear cactus.

The herbaceous understory is moderately abundant but only a few species are common. Grasses provided 44% of the vegetative cover in 1995 and 53% in 2000. Five grass species were found on the site in 1995 and 2000, but crested wheatgrass dominates the composition by making up respectively 95% and 98% of the grass cover. Forbs accounted for 15% of the vegetation cover in 1995 declining to only 8% in 2000. The forb composition is diverse, but only 3 species (timber poisonvetch, Hood’s phlox and scarlet globemallow), provides 88% of the forb cover in 1995 and 96% in 2000. Sum of nested frequency of grasses and forbs slightly decreased in 2000 due to drought.

1982 APPARENT TREND ASSESSMENT

Overall, this area appears to be relatively stable. Soil trend may be down slightly due to continuous low level erosion and soil deposition, although the level terrain helps to minimize the effect. Vegetatively, Wyoming big sagebrush may be slowly expanding. Grasses are being heavily impacted by livestock, which is thought to favor the shrub component. Forbs are insignificant forage sources and are generally undesirable species. Undesirable shrubs include pricklypear and narrowleaf low rabbitbrush, neither of which should be allowed to increase much beyond their present level.

1988 TREND ASSESSMENT

Due to a slight decrease in litter cover, there was a slight increase in the percentage of bare soil in 1988. However, the level terrain limits erosion and trend for soil is still considered stable. The density of the key browse species, Wyoming big sagebrush, remained similar to that of 1982. Vigor has improved since 1982. Most mature plants were rated in form class 2, moderately hedged, rather than form class 3 (heavily hedged). However, a higher percentage (44%) of the sagebrush population was classified as decadent. There is still a substantial population of seedling and young Wyoming big sagebrush. Average sagebrush cover is 21% on the study site. Trend for grasses and forbs are up due to a significant increase in quadrat frequency. Crested wheatgrass, the most abundant grass, tripled its quadrat frequency since 1982. Scarlet globemallow also greatly increased in quadrat frequency (23 to 66).

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - up (5)

1995 TREND ASSESSMENT

Soil trend is up slightly. Percent bare ground declined from 38% to 33% and photos indicate a dramatic increase in herbaceous cover. Nested frequency of grasses and forbs have increased. Trend for sagebrush is slightly improved. Percent decadence has declined from 44% to 8%. It appears that many of the decadent plants surveyed in 1988 are now classified as healthy mature plants. The number of seedlings and young have declined but there are adequate numbers to maintain the population. The secondary browse, winterfat, also shows an improving trend. Heavy use is reduced, vigor is improved and percent decadency has decreased significantly from 15% to 2%. Trend for grasses is slightly up with a significant increase in the nested frequency of crested wheatgrass. Nested frequency of forbs increased slightly with 11 perennial species counted. Overall trend is up slightly.

TREND ASSESSMENT
soil - slightly up (4)
browse - slightly up (4)
herbaceous understory - up slightly (4)

2000 TREND ASSESSMENT

Trend for soil is stable. Relative percent cover of bare ground increased slightly while litter and vegetation cover declined slightly. However, cryptogamic cover increased and the ratio of protective ground cover (vegetation, litter and cryptogams) to bare ground remained similar to 1995 levels. There is some erosion occurring, but it is minimized by the gentle terrain. Trend for the key browse species, Wyoming big sagebrush, is stable. Use is heavier than in 1995. The proportion of sagebrush in poor vigor has increased slightly and

percent decadence has increased from 8% to 22%. This is still relatively low for this type of site. Biotic potential (# of seedlings) and the proportion of young plants in the population have remained similar to 1995 levels and there appears to be enough young plants to maintain the population. Winterfat shows heavier use but a stable population. Trend for the herbaceous understory is considered stable. Sum of nested frequency of perennial grasses has declined slightly but the small decline in the nested frequency of the dominant species, crested wheatgrass, was not significant. Sum of nested frequency for perennial forbs also declined substantially, with a corresponding drop in cover. Since the nested frequency of the dominant herbaceous species, crested wheatgrass, did not decline significantly and the overall decline in sum of nested frequency for perennial grasses and forbs is relatively small, the overall herbaceous understory trend is considered stable.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 17 , Study no: 50

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron cristatum	$_{a}$307	$_{b}$331	$_{ab}$319	32	99	98	95	12.21	16.75
G	Agropyron dasystachyum	$_{a}$-	$_{b}$13	$_{b}$9	1	-	5	5	.02	.05
G	Carex spp.	$_{b}$37	$_{a}$9	$_{a}$10	8	16	4	5	.07	.10
G	Oryzopsis hymenoides	$_{b}$15	$_{ab}$9	$_{a}$2	1	8	5	2	.22	.04
G	Stipa comata	$_{a}$-	$_{b}$13	$_{b}$7	-	-	7	3	.30	.06
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		359	375	347	42	123	119	110	12.84	17.01
Total for Grasses		359	375	347	42	123	119	110	12.84	17.01
F	Allium spp.	-	2	-	-	-	1	-	.00	-
F	Arabis spp.	-	-	-	2	-	-	-	-	-
F	Astragalus convallarius	$_{a}$4	$_{b}$20	$_{ab}$18	4	2	14	9	.78	.09
F	Astragalus tenellus	$_{a}$-	$_{b}$6	$_{a}$-	-	-	5	-	.19	-
F	Calochortus nuttallii	-	3	-	-	-	2	-	.01	-
F	Cordylanthus kingii (a)	-	1	-	-	-	1	-	.01	-
F	Descurainia spp. (a)	-	1	-	-	-	1	-	.00	-
F	Draba spp. (a)	-	5	-	-	-	2	-	.01	-
F	Leucelene ericoides	$_{a}$-	$_{a}$-	$_{b}$8	2	-	-	4	-	.04
F	Machaeranthera canescens	$_{ab}$2	$_{b}$10	$_{a}$-	12	2	5	-	.02	-
F	Phlox hoodii	79	77	72	-	36	33	34	2.02	1.77
F	Phlox longifolia	20	25	10	1	8	11	4	.06	.02
F	Schoencrambe linifolia	2	3	-	1	1	2	-	.01	-
F	Senecio multilobatus	1	-	-	-	1	-	-	-	-

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	Sphaeralcea coccinea	$_{b}$143	$_{a}$121	$_{a}$109	23	66	55	47	.98	.65
F	Tragopogon dubius	-	-	1	-	-	-	1	-	.00
F	Trifolium gymnocarpon	$_{a}$6	$_{b}$20	$_{ab}$11	7	3	9	4	.17	.02
Total for Annual Forbs		0	7	0	0	0	4	0	0.02	0
Total for Perennial Forbs		257	287	229	52	119	137	103	4.26	2.62
Total for Forbs		257	294	229	52	119	141	103	4.29	2.62

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 17 , Study no: 50

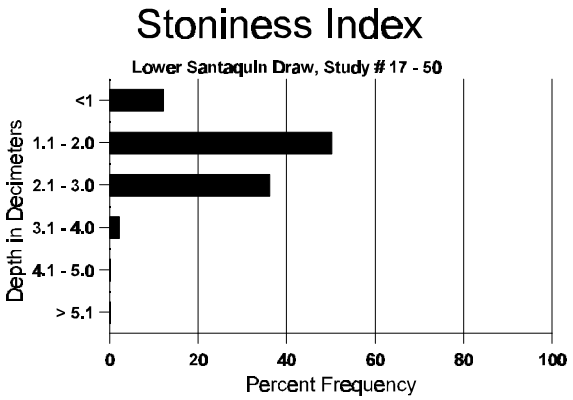
Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia tridentata wyomingensis	87	80	10.30	9.44
B	Ceratoides lanata	35	34	.62	1.03
B	Chrysothamnus depressus	0	1	-	-
B	Chrysothamnus nauseosus graveolens	0	12	-	.69
B	Chrysothamnus nauseosus hololeucus	9	1	.33	.00
B	Chrysothamnus viscidiflorus stenophyllus	5	5	.31	.30
B	Gutierrezia sarothrae	3	1	.06	-
B	Leptodactylon pungens	3	0	.01	-
B	Opuntia spp.	28	34	.44	.76
B	Pediocactus simpsonii	0	2	-	.00
B	Purshia tridentata	0	0	-	.15
Total for Browse		170	170	12.09	12.38

BASIC COVER --
Herd unit 17 , Study no: 50

Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	345	338	6.50	7.00	32.09	31.07
Rock	5	-	0	0	.15	0
Pavement	8	15	0	0	.01	.02
Litter	387	374	58.50	53.00	39.47	40.61
Cryptogams	112	188	0	1.75	1.44	4.18
Bare Ground	316	342	35.00	38.25	32.60	44.56

SOIL ANALYSIS DATA --
Herd Unit 17, Study # 50, Study Name: Lower Santaquin Draw

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
10.57	61.4 (15.35)	7.6	45.3	36.2	18.6	1.0	2.0	99.2	0.5



PELLET GROUP FREQUENCY --
Herd unit 17 , Study no: 50

Type	Quadrat Frequency	
	'95	'00
Rabbit	4	15
Elk	17	28
Deer	29	15
Cattle	-	4

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
00	00
400	N/A
52	4 (10)
1801	139 (342)
104	8 (20)

BROWSE CHARACTERISTICS --
Herd unit 17 , Study no: 50

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	82	28	-	-	-	-	-	-	-	-	7	21	-	-	1866			28
	88	11	-	-	-	-	-	-	-	-	11	-	-	-	733			11
	95	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
Y	82	17	2	-	-	-	-	-	-	-	16	3	-	-	1266			19
	88	18	1	1	-	-	-	-	-	-	20	-	-	-	1333			20
	95	32	12	-	-	-	-	-	-	-	39	-	5	-	880			44
	00	20	18	-	-	-	-	-	-	-	38	-	-	-	760			38
M	82	7	17	14	-	-	-	-	-	-	18	13	7	-	2533	20	23	38
	88	5	14	3	-	-	-	-	-	-	21	1	-	-	1466	19	23	22
	95	10	148	40	3	4	-	-	-	-	205	-	-	-	4100	18	30	205
	00	23	96	38	-	1	-	-	-	-	149	2	7	-	3160	18	26	158
D	82	-	12	7	-	-	-	-	-	-	-	-	14	5	1266			19
	88	8	19	6	-	-	-	-	-	-	30	1	-	2	2200			33
	95	2	15	5	-	-	-	-	-	-	11	-	-	11	440			22
	00	13	14	20	2	5	1	-	-	-	30	-	-	25	1100			55
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	500			25
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	420			21

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	41%	28%	34%	- 1%
'88	45%	13%	03%	+ 8%
'95	66%	17%	06%	- 7%
'00	53%	24%	13%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'82	5065	Dec:	25%
	'88	4999		44%
	'95	5420		8%
	'00	5020		22%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ceratoides lanata																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	5	3	1	-	-	-	-	-	-	8	-	1	-	600			9
	95	3	1	-	-	-	-	-	-	-	4	-	-	-	80			4
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	82	3	6	1	-	-	-	-	-	-	9	-	1	-	666	10	8	10
	88	3	1	3	1	-	-	-	-	-	8	-	-	-	533	6	8	8
	95	43	3	1	-	-	-	-	-	-	46	-	-	1	940	11	13	47
	00	4	21	24	-	1	-	-	-	-	50	-	-	-	1000	7	8	50
D	82	-	-	3	-	-	-	-	-	-	3	-	-	-	200			3
	88	2	-	1	-	-	-	-	-	-	2	-	1	-	200			3
	95	1	-	-	-	-	-	-	-	-	-	-	1	-	20			1
	00	-	2	-	-	-	1	-	-	-	1	-	-	2	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	46%	31%	08%	+35%
'88	20%	25%	10%	-22%
'95	08%	02%	04%	+ 5%
'00	44%	45%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'82	866	Dec:		23%
'88	1333			15%
'95	1040			2%
'00	1100			5%

Chrysothamnus depressus

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	00%	00%	00%	
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'82	0	Dec:	-
'88	0		-
'95	0		-
'00	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus graveolens																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	7	-	1	-	-	-	-	-	-	8	-	-	-	160	19	20	8
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	1	-	-	-	-	-	-	-	1	-	-	1	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	00%	00%	00%	
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	08%	08%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
'82	0	Dec:		0%
'88	0			0%
'95	0			0%
'00	240			17%

Chrysothamnus nauseosus hololeucus																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	8	-	-	-	-	-	-	-	-	8	-	-	-	160	20	21	8
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	00%	00%	00%	
'88	00%	00%	00%	
'95	00%	00%	10%	-80%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'82	0	Dec:		0%
'88	0			0%
'95	200			10%
'00	40			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus stenophyllus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	82	1	-	-	1	-	-	-	-	-	1	1	-	-	133	14	9	2
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133	24	15	2
	95	15	-	-	-	-	-	-	-	-	15	-	-	-	300	13	17	15
	00	14	-	-	-	-	-	-	-	-	14	-	-	-	280	8	18	14
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	1	-	-	-	-	-	-	-	-	-	-	-	1	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	00%	00%	00%	+60%
'88	00%	00%	20%	-10%
'95	00%	00%	00%	- 7%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'82	133	Dec:	0%
	'88	332		20%
	'95	300		0%
	'00	280		0%

Gutierrezia sarothrae

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	4	-	-	-	-	-	-	-	-	4	-	-	-	80	5	6	4
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	00%	00%	00%	
'88	00%	00%	00%	
'95	00%	00%	00%	-75%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'82	0	Dec:	-
	'88	0		-
	'95	80		-
	'00	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Leptodactylon pungens																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	82	9	-	-	-	-	-	-	-	-	9	-	-	-	600			9
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	1	-	-	-	-	-	3	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	82	21	-	-	-	-	-	-	-	-	21	-	-	-	1400	1	7	21
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	2	3	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'82	00%	00%	00%
'88	00%	00%	00%
'95	00%	00%	00%
'00	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'82	2000	Dec:	-
	'88	0		-
	'95	60		-
	'00	0		-

Opuntia spp.																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	1	-	-	-	-	-	-	-	-	-	-	1	-	66			1
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	2	1	-	-	-	-	-	-	-	-	-	3	-	200			3
	95	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	00	5	-	-	-	-	-	2	-	-	7	-	-	-	140			7
M	82	8	-	-	-	-	-	-	-	-	8	-	-	-	533	3	7	8
	88	5	-	-	-	-	-	-	-	-	3	-	2	-	333	3	8	5
	95	40	-	-	-	-	-	-	-	-	40	-	-	-	800	5	11	40
	00	46	-	-	1	-	-	-	-	-	47	-	-	-	940	4	9	47
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	5	-	-	-	-	-	-	-	-	1	-	4	-	333			5
	95	2	-	-	-	-	-	-	-	-	-	1	-	1	40			2
	00	5	-	-	-	-	-	-	-	-	-	-	-	5	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'82	00%	00%	00%	+38%
'88	08%	00%	69%	+ 8%
'95	00%	00%	02%	+20%
'00	00%	00%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'82	533	Dec:	0%
	'88	866		38%
	'95	940		4%
	'00	1180		8%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pediocactus simpsonii																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'82	00%	00%	00%
'88	00%	00%	00%
'95	00%	00%	00%
'00	00%	00%	50%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'82	0	Dec:	0%
	'88	0		0%
	'95	0		0%
	'00	40		50%

Sclerocactus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	2	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'82	00%	00%	00%
'88	00%	00%	00%
'95	00%	00%	00%
'00	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'82	0	Dec:	-
	'88	0		-
	'95	0		-
	'00	0		-